

# Engineering Girls Council Patch Program



Do you want to find problems, brainstorm solutions, and create projects? Learn how to go through a problem-solving process and learn about engineering?

*\*If the requirement is starred (\*) then it is a mandatory activity for all age levels.*

## Discover:

*Daisies complete 2; Brownies complete 3; Juniors complete 4; Cadettes, Seniors and Ambassadors complete 5*

- A. There are many types of engineers. Determine at least five different types of engineers and investigate one of them further.
- B. What schooling is required to become an engineer? Where are the best schools for engineering degrees? What income can be earned from different kinds of engineering? Investigate the career path of engineering.
- C. Go to [bit.ly/3URZfZf](http://bit.ly/3URZfZf) and learn the physics behind forces and motion.
- D. Research at least three famous female engineers. Was their road to success an easy one? Why or why not? Why do more women not pursue careers in engineering?
- E. Investigate three different types of bridges. See how the design is used not only as a functional structure, but as a piece of art as well.
- F. What are the parts of a good outer space rocket design? What are some things engineers must keep in mind when designing and building something that not only has to escape Earth's gravity, but also travel in microgravity?
- G. Engineers must understand how certain materials behave. Check out this lesson on materials to learn more: [bit.ly/3hrQTKo](http://bit.ly/3hrQTKo). What materials are magnetic? What is density?

## Connect:

*Daisies complete 1; Brownies complete 2; Juniors complete 3; Cadettes, Seniors and Ambassadors complete 4*

- A. Interview an engineer. Find out what they do on a daily basis in their career.
- B. Learn about the Society of Women Engineers. Attend an event sponsored by this group or another similar group.
- C. Engineering involves a lot of designing, creating, testing, and modifying. Design a paper airplane or helicopter with a certain goal in mind (distance, accuracy, weight held, etc.) Create several models of your aircraft, then test them, and see how they do. Go back and modify your design to improve overall performance.
- D. Create an extendable grabber. Use the link below to help you build it.  
[www.instructables.com/Extending-Grabber/](http://www.instructables.com/Extending-Grabber/)
- E. Skilled engineers learn from their mistakes. Investigate an engineering failure and see what was learned from the failure.

# Engineering Girls Council Patch Program



## Take Action:

*Daisies complete 1; Brownies complete 1; Juniors complete 2; Cadettes, Seniors and Ambassadors complete 2*

- A. Engineers create solutions to a problem. Find out what a Rube Goldberg device is and then create one.
- B. Create a vehicle that will protect a raw egg when dropped from a height of at least 3 meters.
- C. Environmental engineers create new ways to reduce pollution and improve our planet. Investigate three forms of alternative energy to see how engineers are working to protect the earth.
- D. Design a new roller coaster for your favorite amusement park. Investigate the park and see if they have plans for a new roller coaster in the future. Draw it on a computer or graph paper to scale.

